RHODE ISLAND
DEPARTMENT OF ENVIRONMENTAL MANAGEMENT
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August 10 2006

James Colter
U.S. Department of the Navy
Naval Facilities Engineering Command
10 Industrial Highway
Code 1823-Mail Stop 82
Lester, PA 19113-2090

RE: Remedial Investigation Work Plan NUSC Disposal Area, Naval Station Newport, Newport, Rhode Island

Dear Mr. Colter,

The Rhode Island Department of Environmental Management, Office of Waste Management, has reviewed the response to comments and the Remedial Investigation Work Plan NUSC Disposal Area... Attached are comments generated as a result of this review. If the Navy has any questions concerning the above, please contact this Office at (401) 222-2797, ext. 7111.

Sincerely,

Paul Kulpa

Paul Kulpa, Project Manager
Office of Waste Management

cc: Matthew DeStefano, DEM OWM
Richard Gottlieb, DEM OWM
Kymberlee Keckler, EPA Region I
Cornellia Mueller, NSN

RESPONSE TO COMMENTS FROM RIDEM
DRAFT REMEDIAL INVESTIGATION WORK PLAN
NUSC DISPOSAL AREA

Comments dated March 20, 2006

PAGE	COMMENTS AND RESPONSES
Section 1.1, Background Page 1-1.	***Comment 1:*** *This section of the work plan states that where difference exists between the USEPA and RIDEM's technical approach the USEPA approach will be followed. If differences exist between the federal and state requirements and/or approaches the more conservative or protective approach is implemented. Please modify the work plan to reflect this requirement.* **Response 1:** Because USEPA is the lead regulatory agency for this site, where difference exists between the USEPA and RIDEM's technical approach to remedial investigations and risk assessments the USEPA approach will be followed. *Evaluation of Response* *In accordance with CERCLA the more conservative approach is implemented. Please modify the work plan to reflect this.*
Section 1.1, Background Page 1-1.	***Comment 2:*** *The work plan states that Navy policy for the remedial investigation and risk assessment will be adhered to at all times. Please be advised that the State of Rhode Island has not adopted the Navy policy for the conducting remedial investigations and risk assessments. Therefore, this section of the work plan must be rewritten as follows: The remedial investigation and the risk assessment will be conducted in such a manner as to meet the requirements and the approval of the regulatory agencies.* **Response 2:** This work plan was prepared in accordance with Navy policy, which has been designed to meet the requirements of the regulatory agencies. Efforts will be made for regulatory acceptance of the remedial investigation and the risk assessment. To help ensure appropriate

decision-making, the work plan includes references to available guidance.

Evaluation of Response

While the Navy may have guidance on how to conduct investigations or perform risk assessment the Navy is still responsible for meeting the requirements of the regulatory agencies. The comment was to simply state this requirement in the work plan. Please modify the work plan accordingly.

Section 2.2, Site History, Whole Section

Comment 3:

Please indicate whether file reviews were conducted at NUWC or NETC engineering sections for plans of NUWC. The storage area should have plans for the current and historical onsite structures and any associated drainage or surface runoff controls. In addition, there may be plans for the concrete disposal pits.

Response 3:

File reviews have not been conducted to date. Navy has examined aerial photographs, spoken with former and current employees, and toured the site with former employees. A recent examination of engineering drawings has revealed the approximate locations of 3 storm drains leading to the western side of the NUSC site. Further review of existing information will be conducted during the RI.

Evaluation of Response

Review of engineering plans and drawings is typically performed during the development of the work plan as this information is used to guide where samples are located. This information is presented along with the proposed sample locations to the regulators for review and approval. Therefore, please review the engineering drawings as requested and submit this information along with any proposed sampling locations as part of this work plan for review and approval.

Section 2.2, Site History, Whole Section

Comment 4:

A member of the restoration advisory board who worked at NUWC and had knowledge of the activities conducted at the NUSC disposal area reported the following: Waste acids and bases may have been disposed of in large vertical concrete pipes, tank(s) were present on the site, Otto

PAGE	COMMENTS AND RESPONSES

fuel was stored in the upper storage area, and this storage area had a collection system that may have discharged to an unknown area near or on the site. Please include these statements in the history section.

Response 4:

The following text from the SASE will be added to the RI Workplan: "In 1998, a member of the NAVSTA Restoration Advisory Board, who was also a former employee of the NUSC, stated that in the 1970s there had been two concrete cylinders set in the ground into which NUSC chemists were to dispose of chemicals. One was to be used for alkaline chemicals and the other was to be used for acidic chemicals. The former employee accompanied investigators to the site in June 2003 and identified areas that may have been the location of these previous disposal areas. He also pointed out that he had never actually seen them used. This area was included in the SASE investigation (Cormier, 2003)."

Evaluation of Response

The Navy has not addressed the concerns about Otto Fuel. Please address this issue.

Section 2.2, Site History, Whole Section

Comment 5:

A list of studies that have been performed to date has been included in the site history section. The list should also include the Background Study for metals. Finally, please be advised that the background study was conducted under a separate work plan and is considered a separate study from the RI. As such it must be submitted for review and approval prior to the RI report.

Response 5:

The NUSC Background study will be added to the list of studies in Section 2.2 of the RI work plan. It is the intent of the Navy to submit the NUSC Background Study report to the regulatory agencies prior to the RI report. Since it is not yet complete, the results cannot be summarized in the Draft RI work plan.

Evaluation of Response

Navy has addressed the comment

PAGE	COMMENTS AND RESPONSES
Section 2.2, Site History, Page 2-3. Third Paragraph.	***Comment 6:*** *"Based on the available historical information on the NUSC Disposal area the IAS report identified chemical hazards including VOCs, semi volatile organic compounds and heavy metals from paint residues".* *Please delete the above and substitute the following, which was the conclusion and recommendation of the IAS report.* *"The rubble dump contains inert material (scrap lumber, tires, wire, cable and empty paint cans), which are no contamination threat. The site does not pose a threat to human health and the environment and is not recommended for confirmation study.* ***Response 6:*** The commenter is correct that the IAS concluded, "The site does not pose a threat to human health and the environment and is not recommended for confirmation study." However, the presence of empty paint cans and other debris referred to in the IAS led the Navy to presume at the outset of the SASE that "Possible chemical hazards may include VOCs and heavy metals from paint residues, as well as methane produced from the natural decomposition of organic materials." The text of Section 2.2 of the work plan will be edited to remove the incorrectly attributed statement. *Evaluation of Response* *The Navy has not included the conclusion presented in the IAS report s requested. The intent of the history sections to summarize reports, finding and conclusions from previous investigations, even if these conclusions were subsequently found out to be in error. This is important for a number of reasons, such as it allows the public to understand decisions, which was made by the Navy and the regulators concerning priorities on the base. It also demonstrates that initial findings or conclusions may be in error. Therefore, please include the quoted conclusion in this work plan and in the history section of the RI report produced for the site.*
Section 2.2, Site History, Page 2-3.	***Comment 7:*** *Results of the EBS study reveal that surface water and sediment samples exceed criteria for inorganic contaminants and pesticides. Please provide a table with these results and include a map indicating where*

PAGE	COMMENTS AND RESPONSES

these samples were collected as it may influence the proposed sampling in this work plan.

Response 7:

The EBS Checklist for the NUWC Pond (NSN 2002) presents surface water and sediment data in table format only. No figure is available. Please see the EBS Checklist for the NUWC Pond to review the data.

Evaluation of Response

The function of the RI work plan is to summarize all data in the work plan itself so that decisions can be made concerning sampling locations and chemicals of concern. As this information had to be reviewed during the production of the RI work plan the request was to simply include this information in a table. In regards to the lack of a figure this is not typical and the Navy must explain why a figure was not available.

Section 2.2, Site History, Page 2-3.

Comment 8:

The listed contaminants of concern for Building 179 does not include OTTO fuel, which was present as a free product. Please modify the work plan to reflect this.

Response 8:

The list includes only the COCs identified in the Building 179 RI following completion of the soil removal action and the tank closure. Otto fuel was not identified as a COC during the RI. Propylene glycol dinitrate, a component of Otto fuel, was identified as a COC in the preliminary investigation, which led to the soil removal program.

The paragraph under the Building 179 Concrete UST Remedial Investigation subheading will be rewritten and broken into three paragraphs. The first will focus on information about the Building 179 site history and the soil removal program, including the contaminants identified prior to the removal. The second will focus on the RI with the COCs identified in the RI. The third will focus on groundwater concentrations remaining after the soil removal (VOCs in bedrock wells ranged from 10 –25,980 ppb), as reported in the RI.

Free product associated with Otto fuel was not identified during the RI. Navy requests that RIDEM provide the reference for information regarding the presence of Otto fuel as free product.

PAGE	COMMENTS AND RESPONSES
	Evaluation of Response
	During the initial investigation there was concern of cross contamination and migration of free product from the upper portion of the aquifer to the lower portion. To address this problem the wells had to be abandoned. In addition during the excavation NUWC collect video and photographs of the site. It is recommended that the Navy review these photos and video
Section 2.2, Site History, Page 2-4, 2 nd Paragraph.	***Comment 9:***
	This paragraph deals with the contamination at Building 179. Please modify the paragraph to reflect what is written below.
	The soils at Building 179 were heavily criteria. In addition to the free product associated with OTTO fuel, TPH was detected at concentrations, which exceeded the residential direct exposure standard, the industrial direct exposure standard and the GA and GB leachability standards, VOCs were detected at concentrations of 293 ppm. In addition to the free product on the water table, certain VOCs exceeded GA and GB standards (VOCs in bedrock wells ranged from 10 –25,980 ppb). The observed contamination necessitated the removal of 2,138 tons of soil, the majority of which was listed as a hazardous waste. In addition VOC contamination, potentially not associated with Building 179, was found north of the site.
	Response 9:
	The referenced paragraph deals with soil contamination at Building 179 after the soil removal program. It will be edited to clarify this. See the Response to Comment #8.
	Evaluation of Response
	This information noted above is available in the RI for Building 179. It is unclear why the Navy is hesitant to report the level of contamination at Building 179. Please modify the work plan and any RI report to include the information above
Section 2.2, Site History, Page 2-7	***Comment 10:***
	Partial removal actions have been conducted at the can disposal area and the drum disposal area. Removal activities at both of these locations have been suspended. Please be advised that additional removals and/or investigations are warranted in both of these areas. If it is the intent of the Navy to perform these activities under a separate action, this must

PAGE	COMMENTS AND RESPONSES

clearly be noted in the work plan and any subsequent RI report. If these actions are to be conducted after the RI is completed, the RI will obviously not be able to evaluate the full risk associated with these areas in a risk assessment.

Response 10:

The removal actions in the paint can disposal area and the drum disposal areas have recently been completed. Additional samples will be added to the RI work plan in each of these areas. See Response to EPA Comment #3.

Evaluation of Response.

The work plan must include the results (table and figure) from the confirmatory sampling effort associated with the removal actins as justification for the proposed boring locations. As an illustration it appears that only one boring will be placed on the eastern side of the paint can removal action. A figure depicting the results would be used to justify the sole boring. At this has not been provided the Office is unable to concur with the proposed sample locations.

Section 2.3, Surface Hydrology, Page 2-7 Whole Section.

Comment 11:

Please depict the location of the storm drains from the NUWC facility on the western side of the pond. Further, if it is known that these drains intercept known areas of contamination, this should also be noted.

Response 11:

See Response to EPA Comment #9. The approximate locations of the storm drain outlets will be added to the figures. These drains do not intercept known areas of contamination at NUSC; however, additional samples are proposed at the outlets of these storm drains.

Evaluation of Response

The Navy has included the storm drains in the figure. Please modify the legend of the figures to include a symbol for storm drain or catch basin. Alternatively the catch basin can be labeled as such. Two of the catch basin appears to be single use basins, in that they are not connected to nay other catch basin. Is this the case? Finally, it is recommended that the Navy depict the location of the VOC plumes on the western side in support of their position that these drains do not intercept any known areas of contamination.

PAGE	COMMENTS AND RESPONSES
Section 2.5, Regional and Site Specific Hydrology, Page 2-10 and Figure 2-6.	***Comment 12:*** *The groundwater flow lines depicted in Figure 2-6 seem to be in error. As an illustration the 35 hydroline appears to be to close to DP04, which has a value of 37.98. In addition, there are discrepancies between the datum points in the text and the figure (portions of text elsewhere in the report refer to mean low water, figure refers to NGVD 1929). Please review the hydro plots and address what appears to be discrepancies between the text and the figures.* ***Response 12:*** Figure 2-6 will be revised. The revised figure will depict the general groundwater gradient in bedrock, based on preliminary data collected from four bedrock wells in December 2003. Additional monitoring wells are planned for the RI and variations from these preliminary conditions are expected. The text and figures in the revised work plan will be reviewed and edited to make sure appropriate elevation references are consistently used. Horizontal elevations will be based on NAD 83 and vertical elevations will be referenced to NGVD 1929. See Response to EPA Comment #22. *Evaluation of Response* *Navy has addressed the comment*
Section 2.8, Conceptual Site Model, Page 2-13 and Figure 2-7.	***Comment 13:*** *Please modify the Conceptual Site Model to include the following:* *Direct link from source fish and soil to terrestrial and avian receptors. Sediment and surface water direct link to terrestrial and avian receptors.* ***Response 13:*** The conceptual site model will be revised to include a direct link from soil to terrestrial/avian ecological receptors and a direct link from sediment/surface water to terrestrial/avian ecological receptors. The conceptual site model already has a direct link from source fish to terrestrial/avian ecological receptors. No change to the text on page 2-13 is needed. *Evaluation of Response*

PAGE	COMMENTS AND RESPONSES
	Navy has addressed the comment
Section 2.9.1, Statement of Problem Conceptual Site Model, Page 2-16, Paragraph 2	***Comment 14:*** *The last sentence in the paragraph contains a typographical omission in that it has not included TPH and pesticides as contaminants of concern. Please modify this section to include these contaminants.*
	Response 14: See Response to EPA Comment #10.
	Evaluation of Response
	It appears that the Navy will add these parameters to the list of contaminants. Please be advised that the TPH analysis must be able to detect OTTO fuel. Please indicate in the work plan if this is not the case
Section 3.0, Sampling and Analysis, Whole Section	***Comment 15:*** *Sections of the site are heavily overgrown. Inspection of these areas after the leaves come out is both difficult and non-productive due to decrease visibility. Considering the submission date of this document, and the scheduled approval date, the site should be inspected prior to leaf out. (the inspections will simply entailed walking through the more heavily overgrown sections of the site and looking for evidence of contamination). Please modify the document to state that an inspection will be conducted prior to leaf out. Please notify the DEM of the anticipated date for this inspection.*
	Response 15: These areas of the site will be thoroughly inspected. DEM will be notified of the date. The work plan will be modified accordingly.
	Evaluation of Response
	Section 3.1 does not include the requirement that the inspection will be conducted prior to leaf out. Please include this requirement

PAGE	COMMENTS AND RESPONSES
Section 3.0, Sampling and Analysis, Whole Section	***Comment 16:***
	Based upon information provided in Figure 2-2 a transformer appears to be located on the southwestern corner of the site. Please indicate if it is known whether this transformer contains or had contained PCBs. If PCBs were or are present the soils beneath the transformer should be inspected for signs of a release and sampled for PCBs.
	Response 16:
	The transformer holds 170 gallons, has never leaked, and contains less than 1 ppm PCBs. A DPT soil boring will be added at the transformer location. Soils from that boring will be analyzed for PCBs only.
	Evaluation of Response
	Please indicate the depth of the proposed sample. It is recommended that a composite sample be collected from two locations
Section 3.0, Sampling and Analysis, Whole Section	***Comment 17:***
	At the western side of the pond are known or suspected offsite source areas. Southwest of the site there is a known plume associated with Building 179. Prior to investigating these areas with borings, a soil gas survey similar to the one performed during the SASE should be conducted on the eastern and western sides of the ponds. Additional soil gas survey points should also be installed on the southern end and eastern end of the site to supplement the coverage obtained during the SASE survey. In these areas a tighter grid is required and additional points should be collected in the vicinity if the hot spots observed in the SASE. Finally, a bedrock valley appears to follow the pond in a north south direction. A soil gas survey must be performed in this bedrock valley. Gore sorbers can be used in the wetland areas.
	Response 17:
	A soil gas survey was completed in 2003 as part of the Phase I SASE activities. 33 passive soil gas samples were collected and analyzed for VOCs and SVOCs using Gore Sorber Screening Survey soil gas detectors. No further soil gas sampling is currently planned.
	Evaluation of Response
	As noted above a soil gas survey will provide valuable information, which can be sued to guide the investigation. The Office of Waste

PAGE	COMMENTS AND RESPONSES
	Management disagrees with the response and reinitiates its position concerning the soil gas survey.
Section 3.0, Sampling and Analysis, Whole Section	***Comment 18:***
	The work plan has not proposed digging test pits at the site. During the SASE investigation the test pitting effort was successful at most locations. In addition, as reported in the SASE construction debris is present in the fill area. While the presence of debris does not does not represent a problem for the test pits, it does for geoprobes. Therefore, test pits in lieu of geoprobes must be used at all locations outside of the paved areas. Test pits should be excavated with a large backhoe. Subsidence was not a problem at the numerous test pits inspected by the State, and it is expected that most of the site can be investigated via test pits, however, if there is a subsidence problem, at a particular location then a geoprobe can be used at that location. The potential need to use a geoprobe outside of the paved area can be accomplished by simply digging the test pits prior to using the geoprobe in the paved area.
	Response 18:
	The work plan states that "based on field observations, test-pits may be excavated in lieu of drilling at some locations." See page 3-5 of the work plan.
	Evaluation of Response
	Considering the nature of the site, a landfill with construction debris, geoprobes will have limited utility and recovery rates are expected to be low. Therefore, the Office of Waste Management does not support the use of the geoprobe outside of the pave area and test pits should be employed at the site
Section 3.0, Sampling and Analysis, Whole Section	***Comment 19:***
	The work plan notes that Otto Fuel was used by NUWC and stored at the site. The work plan has not proposed sampling for Otto fuel or any of its components such as 2-nitrophenylamine, propyleneglycol, etc. Please modify the work plan to include analysis for Otto fuel and its components.
	Response 19:
	The work plan will be modified to include analysis for Otto fuel and its components in 5 soil samples collected from the storage area and disposal pits.

PAGE	COMMENTS AND RESPONSES
	Evaluation of Response
	The work plan should also state that OTTO fuel testing will be conducted in areas where there is petroleum contamination and/or yellow colored soil.
Section 3.0, Sampling and Analysis, Whole Section	***Comment 20:***
	Soil borings 105 and 117 are located immediately adjacent to structures. There are six structures in the Building 185 complex. Please indicate what was stored in each structure and why only two structures have borings adjacent to them.
	Response 20:
	The locations already proposed are adequate to determine nature and extent of contamination in this area. Navy disagrees that every structure needs a boring, since materials have been moved and relocated numerous times over the years. Note that Building 185 is a series of four open sheds (covered asphalt areas) used for storage. All are caged with chain link fencing, fitted with fixed roofs, and concrete berms. It is unclear what materials were stored in these areas, however, one locked steel box located between two of the sheds is labeled "Flammable", and a second steel box is labeled "Ottofuel". The storage area is a secure site containing construction debris, cables, empty torpedo shipping containers, storage sheds, empty 55-gallon shipping drums, cables, trailers, pallets, sand bags, boats, vehicle and mechanical parts, and empty torpedo containers.
	Evaluation of Response
	The Navy has noted that since material has been moved and relocated over a number o years it is not necessary to test each storage area. The fact that material has been relocated over the years does not mean that it is no necessary to test all of the storage area (a release may have occurred at one area and not another, or one are may have contained a sump which discharged to a UIC and the other may have not. Therefore, please address the comment as originally requested.

PAGE	COMMENTS AND RESPONSES
Section 3.0, Sampling and Analysis, Whole Section	***Comment 21:*** *Two up gradient monitoring wells (MW 100 and MW 101) are proposed to be located immediately up gradient of the site. These wells are approximately seventy-five feet from each other. Unless it is felt that this spacing is needed please move well MW101 B to soil gas survey point 423385 (if two background wells are needed at this location then simply installed an additional well at this location).*

Response 21:

Two background wells are needed at the south end of the site. MW101 is located on the western side of the stream at the far south end of the site for purposes of intercepting up-gradient contamination, which may be migrating from the Building 179 area. MW100 is located on the eastern side of the stream at the far south end of the site. MW100 will serve multiple purposes depending on groundwater flow dynamics: as a background location and as a way to intercept possible contamination migrating in groundwater from both the Bldg 185 complex and from the up-gradient Building 179 site on the east side of the stream. SB103, one of the DPT borings in the vicinity of soil gas survey point # 423395, will be changed to bedrock monitoring well. In addition, SB100, SB104, and SB108 will be changed from DPT borings to bedrock monitoring wells. The monitoring well replacing SB104 will be placed just west of the BTEX hotspot within the paved gated storage area. These wells will serve to address potential groundwater contamination below the paved gated storage area, which has not been evaluated previously.

Evaluation of Response

It appears that a well will be installed directly on top of soil gas point 423385. Please confirm.

Section 3.0, Sampling and Analysis, Whole Section	***Comment 22:*** *Potential sources of up gradient contamination are located on the western side of the pond. The Navy should consider installing monitoring wells on the western side of the pond.*

Response 22:

MW101 is located on the western side of the stream at the far south end of the site for purposes of intercepting up gradient contamination, which may be migrating from the Building 179 area. A new well will be

installed in the lot adjacent to Building 1310, above and to the west of the pond. During the SASE investigation, an existing monitoring well adjacent to Building 1257 on the upslope west side of NUWC Pond was identified. This well was installed down gradient of Building 110 as part of a UST closure at the building. The UST contained Otto fuel and was closed in place. Under the RI, any available analytical results from this well will be reviewed. If data are not available and the well is still usable, it will be re-sampled. If data are available or the well is usable, the proposed well in the lot adjacent to Building 1310 will not be needed. Data from the new well or the old well, if available, and the proposed MW101 at the south end of the site will serve to identify potential sources of up-gradient contamination on the western side of the pond. The text and tables will be edited as appropriate to include discussion of the newly proposed well and the existing well at Building 1257. See Response to EPA Comments #6 and #9 for additional soil samples on the western side of the pond.

Evaluation of Response

The intent of the comment was for the Navy to investigate and map potential sources on the western side of the pond and install monitoring wells. These source areas have not beep mapped on the figures provided. Please provide the maps as justification for the proposed monitoring wells.

Section 3.0, Sampling and Analysis,
Whole Section

Comment 23:

High readings of TCE and moderate readings of BTEX were observed at soil gas survey point #42770. After this area undergoes additional soil gas investigation and the geophysics are completed (and the information from these studies are evaluated), please install two borings and two bedrock monitoring wells in this location

Response 23:

The proposed and existing sampling locations are adequate to characterize contamination in this area. Precise locations of borings and monitoring wells may change in response to borehole geophysics. The existing monitoring well # MW-03 is located immediately down gradient of soil gas survey point #42770. This well will be re-sampled during the RI and an additional soil sampling location is planned on the embankment immediately down gradient of MW-03. This embankment is very steep, precluding the placement of a monitoring well in this location and potentially requiring use of a hand auger for the planned soil sampling. The work plan has also proposed four new monitoring wells

on the north meadow to the north, east, and south of MW-03 to characterize the area. Results of the borehole geophysical investigation planned for the area of MW-03 will aid in the determination of the precise locations of these wells. No additional soil gas sampling is planned.

Evaluation of Response

Solvents are expected to be found at the down side or the base of a bedrock valley. As such the proposed monitoring wells will not address the comment. Please have a driller investigate the area to ascertain whether it is possible to drill at this location. If it is not possible, please install an intensive grid of soil gas points.

Section 3.0, Sampling and Analysis, Whole Section

Comment 24:

The highest TCE reading in the groundwater was observed at MW-03B. Based upon the SASE information a bedrock valley is located west of this well. After this area undergoes additional soil gas investigation and the geophysics are completed (and the information from these studies are evaluated) please install a boring and a bedrock monitoring well west of MW-03B

Response 24:

MW-03B and soil survey point #42770 are located in the same area. See Response to Comment #23. Note that the southern end of the pond is due west of MW-03B. SW/SD 115 has been placed in this location.

Evaluation of Response

In order to avoid potential scaling problems, please provide an overlay of the soil gas survey points over the map, which depicts existing and proposed monitoring wells. Please note, that placement of a surface water and sediment samples is not sufficient to address potential groundwater contamination, especially for solvents

Section 3.0, Sampling and Analysis, Whole Section

Comment 25:

Elevated levels of chlorinated solvents were found at MW-04B. Based upon the SASE information a bedrock valley is located west south west of this well. After this area undergoes additional soil gas investigation and the geophysics are completed (and the information from these studies are evaluated) please install a boring and a bedrock monitoring well west south west of MW-03B

PAGE	COMMENTS AND RESPONSES
	Response 25:
	No additional soil gas sampling is planned. However, if possible additional bedrock monitoring well and soil boring will be installed west south west of MW-04B. The steep embankments on either side of the streams may preclude the placement of a monitoring well in this area.
	Evaluation of Response
	Soil gas surveys and geophysics will facilitate sitting of the well. If the slopes are two-step and intensive grid of soil gas survey points should be installed.
Section 3.0, Sampling and Analysis, Whole Section	***Comment 26:***
	Monitoring well MW 107B is design to address contamination from test pit 06. Based upon the groundwater flow and the bedrock at the site it appears that this well should be moved approximately fifty feet to the west-southwest. After this area undergoes additional soil gas investigation and the geophysics are completed (and the information from these studies are evaluated) please move monitoring well MW 107 B fifty feet west south west of its proposed location
	Response 26:
	The proposed and existing sampling locations are adequate to characterize contamination in this area. MW107 is planned to characterize groundwater in this area, as no well was installed here during the SASE investigation. The MW107 well location will fill a data gap. MW-106 is located due west of TP-06. MW-105 is located southwest of TP-06. Existing well MW-01 is located south of TP-06.
	Evaluation of Response
	If the Navy feels that the present location of MW 107 is necessary to fill in data gaps simply install an additional monitoring well in the location specified by the comment.
Section 3.0, Sampling and Analysis, Whole Section	***Comment 27:***
	A number of VOCs were detected in MW-02B.in addition high levels of BTEX were detected in soil gas points in this general area, and VOCs were also detected in a number of borings in this vicinity. Please install bedrock monitoring well west, south west of MW-02B. Due to the nature of the contamination the top of the well screen must intercept the top of

the water table.

Response 27:

Based on Response to EPA Comment #3, additional soil sampling locations will be placed within the paint can area southwest of MW-02B. The proposed location of MW102 is on the down-gradient side of the paint can area to intercept possible contaminants migrating from the paint can area and is southwest of MW-02B. The existing and proposed sampling locations will be adequate to characterize contamination in this area. No screens are planned for the bedrock wells unless field conditions require installation (i.e. to prevent collapse of the borehole and/or minimize the vertical migration of contamination within the boring). All bedrock wells will be open-hole wells. If a surficial aquifer is present, an overburden well will be co-located with the bedrock well. For overburden wells, the well screen will be placed across the water table.

Evaluation of Response

Navy has addressed comment.

Section 3.0, Sampling and Analysis, Whole Section

Comment 28:

A bedrock valley is located in the central portion of the site. Chlorinated solvents would be expected to follow the valley and either pool, discharge in the pond, etc, The Office of Waste Management realizes that the geophysical survey, additional soil gas survey will provide information concerning the fate of the solvents. Additional efforts may be necessary, such as placing diffusion bag samplers in the pond, etc. The work plan should note this problem and state that additional measures may be necessary.

Response 28:

A soil gas survey was completed in 2003 as part of the Phase I SASE activities. 33 passive soil gas samples were collected and analyzed for VOCs and SVOCs using Gore Sorber Screening Survey soil gas detectors. No further soil gas sampling is currently planned. The existing soil gas survey is adequate.

The proposed surface water sampling approach is adequate to capture VOCs and SVOCs. The results of the SASE investigation indicate few VOCs were detected in Deerfield Creek and none of them exceeded AWQC-CCC criteria. None of the VOCs detected in sediment had concentrations in excess of the RS-PRGs or Direct Exposure Criteria.

Evaluation of Response

The Office of Waste Management disagrees with the Navy's position concerning the need for additional soil gas survey work. In regards to diffusion bags, placement of the bags and or soil gas point in the sediment, over a period of time may be more effective then a one-time grab sample.

Section 3.2.1.2, Geophysical Investigation, Page 3-3.

Comment 29:

The work plan notes that a geophysical investigation will be conducted to determine the depth to bedrock and examine anomalies, including buried drums. The location for the geophysical survey and the spacing of the survey has not been included in the work plan. In addition, it has not been noted whether the survey will also include the boundaries of the site to ascertain the extent of fill. Please modify the work plan to include this information (location of geophysical survey must also be depicted on a map, it is assumed that the survey will extend beyond the boundaries of the site).

Response 29:

The work plan stipulates that a series of parallel traverses will be made across the site. Details pertaining to the traverses will be described in a technical specification for the geophysics subcontractor. The Navy's intent is to carry out the geophysical survey over the entire NUSC parcel or at least those areas accessible to GPR or EM field techniques. Precise locations will be reported in the RI. The purpose of conducting surface geophysics is to locate buried metallic objects, such as drums, and such. Navy is not planning to conduct surface geophysics for the purposes of defining top of bedrock or extent of fill. Both will be estimated based on

PAGE	COMMENTS AND RESPONSES
	results of the test pitting and/or drilling efforts. Navy does not anticipate going beyond the boundaries of the site. *Evaluation of Response* *Typically maps are provided with the proposed geophysical survey limits, spacing, etc. Please provide these maps. Seismic surveys are typically performed during bedrock investigations as this information is used to guide the placement of wells. Please modify the work plan to include geophysical techniques for the bedrock.*
Section 3.2.1.2, Geophysical Investigation, Page 3-3.	***Comment 30:*** *A geophysical survey is proposed to investigate anomalies, including buried drums. Although not stated, it is assumed that this survey will be conducted in the vicinity of the known drum disposal area. In order to avoid confusion in the field the work plan must stipulate that a portion of the survey will be conducted in this area. Further, test pits were dug in the vicinity of the drum disposal area to determine the extent of the problem. The drums were not removed during this test pitting exercise. The work plan must stipulate that the test pits with the known drums will be investigated with the geophysical surveys. The operators of the geophysical survey will also not be made aware of the buried drums in this area. This will allow for a blind test of the effectiveness of these surveys.*

Response 30:

The Navy's intent is to carry out the geophysical survey over the entire NUSC parcel, including known disposal areas. Surface geophysics will be performed across the site to locate buried metallic objects. EM methods will be used initially to screen the survey area. GPR will be used to evaluate depth and condition of anomalies that may represent buried drums. For Health and Safety reasons, the operators of the geophysical survey WILL be made aware of the fact that buried drums were found at the site and that a removal action has been conducted. All on-site workers must have a full Health and Safety briefing.

Evaluation of Response

It is understandable that the operators should be made aware of the fact that drums were found at the site. The intent of the comments was not to demarcate the area of the drums as a check of the effectiveness of the techniques.

Section 3.2.1.2, Geophysical Investigation, Page 3-3.

Comment 31:

The geophysical survey is being conducted to locate anomalies and the depth of bedrock. This information will then be used to guide the subsequent parts of the investigation, such as the installation of the boring, test pits, monitoring wells, sediment samples etc. In order to avoid confusion in the field the work plan must clearly stipulate that the geophysical surveys including interpretation of the data will be completed and the results of this survey will be presented to the onsite project manager and the regulators, prior to the next phase of the investigation (test pitting, installing borings, wells, collecting sediment samples, etc) so that changes or additions in the subsequent phases of the investigation can be made. This requirement will also be reflected in the schedule for the site.

Response 31:

Surface geophysics is primarily being conducted to locate anomalies. It is not being conducted to investigate depth to bedrock. The following statement will be added to the text of Section 3.2.1.2: "This information will then be used to guide the selection of subsequent sampling locations. The geophysical investigation including interpretation of the data will be completed and the results will be presented to the appropriate site personnel prior to the next phase of the investigation (installing soil borings and monitoring wells and collecting surface water, sediment, and biota samples)." The results of the geophysical investigation will be

available to all interested parties.

Evaluation of Response

Please have the work plan state that the information and its interpretation along with proposed changes in sample locations will be provided to the regulators prior to making and implementing any changes in sampling locations.

Section 3.2.1.2, Geophysical Investigation, DPT Borings, Page 3-7.

Comment 32:

Core recovery is a problem with narrow cores. Please modify this section to state that 2-inch cores, with a core catcher will be used (note the core catcher is also required for standard boring methods).

Response 32:

Applicable portions of the text will be edited to specify equipment sizes and use of appropriate downhole tools for the purpose of collecting soil and rock cores.

Evaluation of Response

It appears that two-inch cores will be used. Please confirm

Section 3.2.1.5, Soil Sample Acquisition, Page 3-9.

Comment 33:

The workplace notes that soil samples will be collected from the 0-1 foot interval beneath the pavement. The 0-1-foot interval beneath pavement represent soils that have been extensively reworked and/or represents fill that was brought to the site. Accordingly, testing of this soil may represent testing of imported fill and not testing of soil subject to a release. Therefore, the work plan must stipulate that the 0-3 foot interval beneath the paved areas will be examined. Samples will not be collected from the 0-1 foot interval, unless there is field instrument, visually, or olfactory evidence of contamination. Otherwise samples will be collected in the 1-3 foot interval.

Response 33:

Section 3.2.1.5 of the work plan will be edited to stipulate that the 0-3 foot interval beneath the paved areas will be examined. Samples will not be collected from the 0-1 foot interval beneath paved areas, unless there is field instrument, visually, or olfactory evidence of contamination. Otherwise samples will be collected in the 1-3 foot interval.

PAGE	COMMENTS AND RESPONSES
	Evaluation of Response
	Navy has addressed comment.
Section 3.2.1.5, Soil Sample Acquisition, Page 3-9.	***Comment 34:***
	Soil samples 123, 124 and 125 are proposed background locations. These samples abut a potential source area specifically, the golf course. To address this concern additional and to provide information from western up gradient sources samples should be collected on the western end of the pond.
	Response 34:
	See Response to EPA Comment #18 regarding background soil samples. See Response to EPA Comments #6 and #9 regarding samples on the western side of the pond.
	Evaluation of Response
	See other response, which deal with this issue.
Section 3.2.1.6 Bedrock Coring, Page 3-13.	***Comment 35:***
	The proposed depth of the bedrock cores is thirty feet. Chlorinated solvents have been found at the site. A review of the bedrock wells installed in the SASE reveals that fractured and/or weather bedrock was found at the end of the thirty feet cores. Considering the type of the contamination and the nature of the bedrock, bedrock cores should be advanced to a minimum of fifty feet into the bedrock
	Response 35:
	A review of the bedrock borings advanced during the SASE indicates that while there may have been a few fractures below 30 feet, the rock was overall more competent at a depth of 30 feet below its' surface than at its' surface. MW04B is an exception. The text will remain unchanged as 30 feet is a reasonable length to core at this stage.
	Evaluation of Response
	Bedrock investigations are typically performed to competent bedrock. As fractures are still present at thirty feet the depth of the borehole should be increased as specified.

PAGE	COMMENTS AND RESPONSES
Section 3.2.1.7,Monitoring Well Installation Overburden Monitoring Well Construction, Page 3-17.	***Comment 36:*** *In accordance with Rhode Island Groundwater Regulations the filter pack and the well screen must allow for the free movement of contaminants into the well and be sized for the geologic characteristics of the aquifer. As the wok plan has not proposed which filter pack and screen size will be used at specific wells, it is assumed that these decisions will be made in the field. The work plan must state that the field geologist will provide the necessary documentation in support of the particular filter pack or screen sized used. Further, the plan must state that at least two different filter packs and screen sizes will be available in the field at the time of drilling.* ***Response 36:*** The following will be added to Section 3.2.1.7: "The site geologist will determine screen size and filter pack materials needed in the field. Rationale used to make these decisions will be described in the field logbook. At least two different screen sizes and filter pack materials will be available in the field at the time of well construction." *Evaluation of Response* *Navy has addressed the comment.*
Section 3.2.1.7,Monitoring Well Installation Overburden Monitoring Well Construction, Page 3-17.	***Comment 36 a*** *Typically bedrock-monitoring wells have a 2-5 foot sump at the base of the well. Please modify the work plan to reflect this requirement.*
Section 3.2.1.7, Monitoring Well Installation Well Development, Page 3-18.	***Comment 37:*** *Please state how soon after monitoring well installation the wells will be developed.* ***Response 37:*** Development of all newly installed monitoring wells will be performed no sooner than 24 hours after well completion and before groundwater samples are collected. The following will be added to Section 3.2.1.8 Well Development: "Well development will be performed in accordance with RIDEM policy to the extent practicable. Development of all newly installed monitoring wells will be performed no sooner than 24 hours

PAGE	COMMENTS AND RESPONSES
	after well completion and before groundwater samples are collected." *Evaluation of Response* *Navy has addressed the comment*
Section 3.2.1.7,Monitoring Well Installation Well Development, Page 3-18.	***Comment 38:*** *The work plan states that if the well is not fully developed within two hours the Navy will be contacted to determine the course of action. It is not uncommon for it to take longer than two hours to develop a well Therefore, the work plan should stipulate that if the well is not developed after four hours the Navy will be contacted to determine the next course of action.* ***Response 38:*** The work plan will be edited to stipulate that if the well is not developed after four hours the Navy will be contacted to determine the next course of action. *Evaluation of Response* *Navy has addressed the comment*
Section 3.2.1.9,Hydraulic Conductivity Test, Bedrock Packer Test, Page 3-20.	***Comment 39:*** *Please confirm that a section of the bedrock borehole will be isolated with a packer. A groundwater sample will be collected via low flow, and then pressure test will be conducted. Finally, as in overburden wells during the purging process the pure water pump intake will be slowly raised and PID readings will be collected. The zone with the highest PID readings will determine the depth at which the pump is placed.* ***Response 39:*** The text will be edited for clarification. *Evaluation of Response* *Navy has addressed the comment*
Section 3.2.1.10,Groundwater Sampling,	***Comment 40:*** *The groundwater analysis does not include TPH. If petroleum is*

PAGE	COMMENTS AND RESPONSES
Page 3-21.	*detected in a borehole, or if a well is installed in the vicinity of other bore holes or test pits, which contained petroleum, the groundwater in the monitoring well must be tested for petroleum. Please modify the work plan to reflect this requirement.*
	Response 40:
	The text on p. 3-21 will be edited to include GRO/DRO.
	Evaluation of Response
	Navy has addressed the comment
Section 3.2.1.10,Groundwater Sampling, Page 3-21.	***Comment 41:***
	The first bullet notes that the presence of NAPLs will be determined by a bailer and an oil water interface probe. Although it is recognize that this is the intent of the work plan, in order to avoid confusion in the field, this bullet should also state that a sample of the NAPLs will be collected and analyzed if present.
	Response 41:
	The following will be added to the first bullet of Section 3.2.1.10: "If evidence of petroleum contamination is present, a sample of the NAPL will be collected and analyzed for petroleum."
	Evaluation of Response
	Navy has addressed the comment. However, in order to avoid confusion in the field any NAPL (DNAPL or LNAPL) if present will be sampled. Please modify the work plan accordingly.
Section 3.2.1.10,Groundwater Sampling, Page 3-21.	***Comment 42:***
	The Office of Waste Management realizes that it is the intent of the Navy to analyze NAPLs for petroleum if evidence of petroleum contamination is present. In order to avoid confusion in the field please modify this section of the report to include this contingency.
	Response 42:
	See Response to Comment #41 above.
	Evaluation of Response

PAGE	COMMENTS AND RESPONSES
	Navy has addressed the comment
Section 3.2.1.10, Groundwater Sampling, Page 3-21	***Comment 43:***
	During the SASE investigation groundwater sampling of the overburden above the bedrock was hampered by a low water table. The solution to the problem was to perform groundwater sampling of the overburden during the high water table season (typically spring). Considering the submission date for this work plan it is unlikely that the spring sample date will be met. Therefore, prior to approval of this work plan, the Office of Waste Management suggest that the Navy take water level measurements in any existing bedrock or "over burden" wells in the spring to ascertain the seasonally high water table height.
	Response 43:
	Navy is unable to perform work under the work plan prior to the approval of the work plan. The schedule for fieldwork will be determined after approval of the work plan.
	Evaluation of Response
	If necessary, the Office of Waste Management is willing to approve independent of the rest of the work plan the methods for water table measurements specified in the work plan so that the work can be implemented in a timely manner. Finally, please be advised to address seasonal fluctuations the water table height and chemistry must be sampled at both high and low water table.
Section 3.2.2, Surface Water and Sediment Sampling, Page 3-24	***Comment 44:***
	VOC contamination is a concern at the site. The Navy may wish to evaluate whether diffusion bag samples or gore sobers can be used in the streams and the pond for VOC analysis.
	Response 44:
	See Response to Comment #28 above.
	Evaluation of Response
	See previous response.
Section 3.2.2, Surface Water and Sediment Sampling, Page 3-24	***Comment 45:***
	In the SASE the streams and the wetlands were to be inspected for evidence of contamination. Significant sections of the stream and

PAGE	COMMENTS AND RESPONSES
	wetlands are heavily overgrown. Inspection of these areas was both difficult and nonproductive due to the decreased visibility associated with the vegetation. As a result only portions of the streams and the wetlands were inspected. Therefore, considering the submission date of the work plan and the scheduled approval date, the streams and the wetlands should be inspected prior to leaf out for signs of contamination. Please modify the work plan to reflect this requirement. Also please notify the DEM concerning the planned date for this inspection.
	Response 45:
	See Response to Comment #15 above.
	Evaluation of Response
	See previous response.
Section 3.2.2, Surface Water and Sediment Sampling, Page 3-24	***Comment 46:***
	In order to avoid confusion in the field the work plan should stipulate that unless there are indications of contamination sediment samples will be collected from depositional areas with high organic content.

Response 46:

The second sentence in the first full paragraph on page 3-25 states "Surficial sediment samples will be collected from depositional areas in the streams and NUWC Pond." The following text will be added after the word "areas" in that sentence: "with suspected high organic content (i.e., silt)"

Evaluation of Response

Navy has addressed the comment

Section 3.2.2, Surface Water and Sediment Sampling, Page 3-24

Comment 47:

Sediment sample SW/SD100 is proposed to be taken adjacent to the paint can disposal area. The outline of the disposal area has not been included on a map. In order to avoid confusion in the field the work plan must stipulate that the location where the cans were first discovered and the limits of the removal action will be geopositioned in the field. In addition, it will be ascertained whether the removal action extended into the stream (at a minimum the field notes will be reviewed and the personnel who conducted the removal action will be contacted). Finally, a determination will be made as to whether erosion from the removal action or from the cover material used in the removal action has entered the stream. All of this information will be reported in the work plan and used to guide and if necessary n modify the collection of sediment samples in this area.

Response 47:

Sediment sample SW/SED100 is proposed to be taken immediately up stream of the paint can disposal area. The outline of the paint can disposal area has been included on Figure 3-1. The outline will be updated now that the removal has been completed and will be added to Figure 3-2. The areas of both removal actions will be included in the list of features to be surveyed (p3-31). The proposed down stream sediment sampling locations will identify contaminants entering the stream from the paint can area either in the past or during recent removal activities. The report from the removal activities has not yet been released, but will be considered during the sample collection. Review of that report may result in modification of proposed sample locations.

Evaluation of Response

The comment contains a typo (comment referred to sediment sample

PAGE	COMMENTS AND RESPONSES
	101). In regards to collection of the sediment sample measures must be taken to avoid testing of clean fill, which may have washed into the stream. The stream substrate must be examine for evidence of clean fill erosion
Section 3.2.2, Surface Water and Sediment Sampling, Page 3-24	***Comment 48:***
	Significant contamination was observed at MW-03B. Please collect a sediment sample south of this area.
	Response 48:
	Proposed sample locations SW/SED113, SW/SED114, and SW/SED115 are located south, southwest, and west of MW-03B. An additional sample location will be added between SW/SED115 and SW/SED118 in the area where the vegetation boundary juts out into the water.
	Evaluation of Response
	Navy has addressed the comment
Section 3.2.2, Surface Water and Sediment Sampling, Page 3-24	***Comment 49:***
	The work plan has proposed collecting one sediment sample adjacent to the paint can disposal area. This is a known source of lead contamination. Therefore a minimum of four sediment samples must be collected adjacent to the lead disposal area. At least two of the sediment samples will be taken on the same side of the paint cans disposal area. One sample, as proposed in the work plan, will undergo analysis for the full list of contaminants. Analysis for the other samples will be limited to lead. In addition to the proposed down gradient sediment samples, two sediment samples will be collected down stream of this area, (15 feet and 30 feet down stream respectively. Analysis of these samples again will be limited to lead. Finally, if it is determine that erosion from the removal action has impacted this portion of the streams additional samples will have to be taken.
	Response 49:
	The area of the stream adjacent to and immediately down stream of the paint can removal area is narrow (~1-2 wide) and very rocky with little sediment available for collection. Therefore, the Navy believes that SW/SED101 and SW/SED102 will capture contamination from the disposal area. The exact locations of SW/SD101 and SW/SD102 will be determined in the field based on the availability of sediment.

PAGE	COMMENTS AND RESPONSES
	Evaluation of Response
	Regardless of the nature of the stream bed the area adjacent to and immediately down gradient of the paint can disposal area must be intensively investigated. Please address the comment.
Section 3.2.2, Surface Water and Sediment Sampling, Page 3-24	***Comment 50:***
	The area of the paint can removal action extended beyond that initially predicted. Therefore, the stream down gradient of the removal action will be visually inspected and examined with a metal detector. A shovel will be used to investigate suspect areas. Please modify the work plan to reflect this requirement.
	Response 50:
	The stream down gradient of the paint can removal action will be included in the geophysical survey.
	Evaluation of Response
	Navy has addressed the comment
Section 3.2.2, Surface Water and Sediment Sampling, Page 3-24	***Comment 51:***
	The size of the pond changes dramatically (area change is approximately fifty percent, from 1-2 acres). In addition there are potential offsite source areas on the western end of the pond, (solvent plumes associate with Building 179 and other sources). Therefore, a series of sediment samples should be taken along the western end of the pond. Please modify the work pan to include sediment sampling in this area.

PAGE	COMMENTS AND RESPONSES
	Response 51:
	Two soil samples will be added along the western edge of the pond in areas potentially impacted by flooding and three soil samples will be added below the discharge points from the storm drains on the western side of the pond. See Response to EPA Comments #6 and #9. Building 179 is located south of the NUSC site, bordering the stream, not the pond. SW/SED 101 is located to capture contamination associated with Building 179.
	Evaluation of Response
	Plumes noted in the comment were north of Building 179. Please locate plumes on map to ascertain if proposed sampling effort is adequate.
Section 3.2.2, Surface Water and Sediment Sampling, Page 3-24	***Comment 52:***
	Sample SW SD 108 is proposed to be collected immediately west of the road. Sample SW/SD 04 was taken in essentially the same area, (immediately east of the road). Please either move sample SW SD 108 closer to DP-05. Or collect an additional sediment sample in this area.
	Response 52:
	As stated in the work plan, some proposed sediment-sampling locations were sampled previously or are in close proximity to previously sampled locations. Sediment toxicity sampling was not performed previously and is now needed for the ecological risk assessment. SW/SED 108 is proposed to be collected immediately west of the road to capture contamination entering the unnamed stream from off-site. SW/SED 107 is proposed to be collected down stream of DP-05 to capture contamination from either the north or south meadows entering the unnamed stream.
	Evaluation of Response
	Navy has addressed the comment
Section 3.2.2, Surface Water and Sediment Sampling, Page 3-24	***Comment 53:***
	Surface water from the pond discharges into a stream, which ultimately empties into Narragansett Bay. Sediment sampling of this stream and its discharge location must be included in the work plan.
	Response 53:

PAGE	COMMENTS AND RESPONSES

See Response to EPA Comment #6.

Evaluation of Response

The Navy has proposed collecting surface soil samples. Sediment samples along the length of the stream must also be collected. Please modify the work plan accordingly.

Section 3.2.2, Surface Water and Sediment Sampling, Page 3-25, Paragraph 3.

Comment 54:

The work plan states that three surface water and sediment samples will be taken from the Melville Pond, which will serve as reference samples. As previously noted Tank Farm 1 may affect the lower Melville Ponds. Tank Farm 2 may affect the upper pond. The Portsmouth Melville Dump is located near the Middle Ponds. If the Navy elects to sample these ponds and contamination is found above benchmarks this information will prove beneficial in determining whether releases from the above suspect source areas have impacted these ponds. However, if elevated levels of contaminants are found, the Navy will not be able to use the information as reference or background for the NUSC study. Further, the Office of Waste Management will not accept any report or any conclusions based upon elevated levels found in these ponds. Therefore, please add the following to the end of paragraph 3.

Known areas of contamination are located in the vicinity of the Melville Ponds. If concentrations of contaminants taken from these ponds exceed benchmarks (including but not limited to Long and Morgan Consensus Based Freshwater Criteria), these ponds will not be used ads reference sites and alternative reference sites such as Lawton Valley reservoir will be evaluated.

Response 54:

The work plan states that three surface water and sediment samples will be taken from the Melville Pond or an equivalent location to serve as a reference location for the NUWC Pond samples. Samples from Melville Pond or an alternative reference location will be analyzed via quick-turn analysis to determine if they are suitable for use as a reference location (based on chemical analysis and/or sediment type, etc). If RIDEM can provide specific documentation of known contamination of Melville Pond, Navy will review it prior to finalizing the decision on reference locations.

Evaluation of Response

PAGE	COMMENTS AND RESPONSES
	As stated in the comment the ponds abut known areas of contamination. The ponds have yet to sampled. Therefore, it is not possible to provide the Navy with specific information.
Section 3.2.2, Surface Water and Sediment Sampling, Page 3-25, Paragraph 3.	***Comment 55:*** *This paragraph which, lists the contaminants of concern that will be tested for in the sediment samples, contains a typographical omission. Petroleum is a contaminant of concern at the site and it must be tested for in the sediment. Please modify the work plan to state that sediment samples will undergo testing for TPH.*
	Response 55: TPH will be added.
	Evaluation of Response
	Navy has addressed the comment
Section 3.2.2, Surface Water and Sediment Sampling, Page 3-25, Paragraph 3	***Comment 56:*** *The surface water in the area changes dramatically (size of pond changes between 1-2 acres. As such deposition and erosion of sediments take place between flooding events. This may result in what is now a depositional area is eroded during low pond conditions. This removal of sediments would expose organisms to deeper contaminants. Further, at other sites, contaminated sediments was not found in the top four inches but instead was found at depth. Therefore, the work plan must stipulate that at each sediment sampling location a hole will be dug which is approximately two feet in depth (this depth was easily achieved with a shovel or a bore tool at other sediment sites on the base). The soil removed from the hole will be visually examined for contamination*
	Response 56: For purposes of risk assessment, surficial sediment samples are the most relevant. Minimal sediment is available in the streams. Two deeper sediment samples will be added within the pond for nature and extent purposes. Assuming pond depth at no greater than 10 feet; two sediment cores will be collected 0 to 2 feet below the streambed at two locations within the pond. Two samples will be collected from each sediment core. One sample will be collected from 0 to 4 inches and the second sample will be collected from 4 to 24 inches.
	The wetland area will be examined visually for evidence of deeper

contamination.

Evaluation of Response

The intent of the RI is to determine the nature and extent of contamination. If contaminated sediment is found in a deeper interval it must be sampled. Further, stream environments are dynamic especially those subject to wide variations in water height. Therefore, it is inappropriate to assume that the current conditions at a site will remain static. Please address the comment.

Section 3.2.2, Surface Water and Sediment Sampling, Page 3-25, Paragraph 4.

Comment 57:

Although not specified it is assumed that surface water samples will be collected from the bottom of the stream, and where possible the pond. In order to avoid confusion in the field please include this requirement.

Response 57:

The following will be added to the text: "Surface water samples will be collected from the bottom of the stream, and where possible the pond."

Evaluation of Response

Navy has addressed the comment

Section 3.2.2, Surface Water and Sediment Sampling, Page 3-27, Paragraph 1.

Comment 58:

The work plan proposes to analyze the sediment samples for lead and to use this information to determine which samples undergo additional chemical analysis and toxicity test. PAHs and PCBs were also found in the sediment samples at elevated concentrations. Therefore at a minimum, all sediment samples must undergo analysis for lead, PAHs, PCBs and TPH. This information will be used to ascertain which samples undergo toxicity testing. Please modify the report accordingly.

Response 58:

As discussed in the "Sediment Invertebrate Toxicity Tests" section in Section 5.3, lead is the only parameter selected for quick-turn analysis because it is the primary chemical of concern for amphipods at the Site. The text also states that based on the historical data for locations sampled during the SASE, the elevated concentrations of PAHs were generally co-located with the elevated concentrations of lead so the locations with elevated PAHs will likely be selected for toxicity testing. Finally, the previously collected data for PAHs and PCBs will be used to help select

the samples for toxicity testing to ensure some of the samples selected for toxicity testing will be in areas where concentrations of PAHs and PCBs were elevated, if possible.

This sampling approach was selected because 25 samples could be analyzed for quick-turn analysis of lead at a relatively low cost and because lead is the primary risk driver in the sediment. Quick-turn analysis for PAHs, PCBs, and TPH for 25 samples would be very expensive. Navy does not believe that this expense is necessary because it is likely that the areas with elevated levels of PAHs and PCBs will be included in the toxicity test samples based on the sampling approach. If the selected samples do not have elevated detections of PAHs and/or PCBs, it would indicate that the contamination for those parameters is not widespread. Some of the samples selected for the toxicity tests will be located in areas where the levels of PAHs and PCBs were elevated in the historic samples.

Note that all of the sediment samples that are selected for the toxicity tests will be analyzed for PAHs, PCBs, and TPH.

Evaluation of Response

The site is a dump and as such contaminate distribution is not homogenous. All sediment samples must under go analysis for the full list of compounds. It is acceptable to limit the quick turn around to lead, as areas with elevated levels of other contaminants can be resampled in the future for both chemistry and toxicity. Finally, in regards to the quick turn around time for lead, if the sediment samples are oven dried in the field the Navy may elect to use a field XRF for sample analysis.

Section 3.2.3, Invertebrate Toxicity Test, Page 3-27.

Comment 59:

The sediment toxicity test using amphipods are proposed. Typically three or more different toxicity test is performed at a site. If the Navy elects to do toxicity test at least three different test species must be used.

Response 59:

Please list the sites where three or more sediment toxicity tests have been conducted to determine whether the contamination/habitat at those sites warranted the conduct of three different tests. The Navy is not aware of sites where three or more sediment toxicity are typically conducted. Never the less, the Navy believes that only one toxicity test is required at NUSC because the primary chemical of concern is lead and *Hyalella azteca* is more sensitive to lead than *Chironomus tentans* or *Lumbriculus*

variegates, two other species that are commonly used for sediment toxicity tests.

Evaluation of Response

Contaminants of concern are not limited to lead. In addition chronic toxicity test using more than one test species must be employed. Finally, the Office of Waste Management will ***not*** *accept the result of a single species toxicity test to over ride indications of risk present by other test, such as chemistry. Nor will it accept any ecological risk basement based upon this position.*

Section 3.2.3, Invertebrate Toxicity Test, Page 3-27.

Comment 60:

Diversity analysis (population count of invertebrates in stream sediments, deployment of artificial substrates, etc) is typically performed in freshwater environments to access impacts. It also provides additional information should there be differences in end results with other test performed on the sediment, (for example results of chemistry test and toxicity tests conflict). Please modify the work plan to include diversity analysis.

Response 60:

Diversity analysis is one line of evidence to assess impacts to benthic invertebrates. However, because of the different habitats at NUSC (i.e., pond sediment, wetland sediment, and stream sediment), the Navy believes that it would be difficult to interpret the results of the diversity analysis and relate those results to contamination at the site. Therefore, diversity analysis is not proposed for the site.

Evaluation of Response

Diversity analysis and artificial substrate have been employed at other sties where stream, rivers and a pond are present. Please modify the work plan to include diversity analysis and artificial substrates.

Section 3.3,3,Investigation Derived Waste, Page 3-32.

Comment 61:

Please add a sentence stating that IDW will be handled in accordance with RIDEM IDW policy.

Response 61:

The following text will be added to Section 3.3.3 of the work plan: "All IDW will be handled in accordance with RIDEM's Policy Memo 95-01,

PAGE	COMMENTS AND RESPONSES
	titled Guidelines for the Management of Investigation Derived Wastes."
	Evaluation of Response
	Navy has addressed the comment
Section 4.2, Project Action Limits Page 4-4.	***Comment 62:*** *Please modify paragraph 4 to state that project action limits include RIDEM leachability standards.*
	Response 62:
	See Response to EPA Comment #26.
	Evaluation of Response
	It appears that the Navy has addressed the comment
Section 5.2, Human Health Risk Assessment, Data Evaluation Page 5-4, Paragraph 2.	***Comment 63:*** *This section of the work plan states that here are no recreational criteria available. The State of Rhode Island residential and recreational criteria are the same. Therefore, please remove this statement and note that the State's residential and recreational criteria are the same and will be used in the risk assessment*
	Response 63:
	The RI will be using residential criteria for COPC selection because the future residential scenario will be evaluated. The portion of the statement regarding lack of recreational criteria will be deleted from the text. As a point of clarification, please note the Navy disagrees with the general assertion that in Rhode Island residential and recreational criteria are the same. RIDEM's Waste Remediation Regulations define activities related to "unrestricted outdoor recreational areas" as equivalent to "residential activity" and activities related to "outdoor recreational areas with restrictions in place to limit exposure" as equivalent to "industrial/commercial activity".
	Evaluation of Response
	The Navy has addressed the comment as to deleting the requested statement.
Section 5.2, Human Health Risk Assessment, Data	***Comment 64:***

PAGE	COMMENTS AND RESPONSES
Evaluation Page 5-5 Paragraph 2, 2nd sentence.	*This paragraph contains a typographical omission. It notes that surface and subsurface soils and sediments will be screened against Region IX residential criteria. Previously it was noted that RIDEM criteria will be used in this process. In order to avoid confusion in the work plan please modify this sentence to include RIDEM criteria.* ***Response 64:*** The text will be edited to include RIDEM residential soil direct exposure criteria. *Evaluation of Response* *Navy has addressed the comment*
Section 5.2, Human Health Risk Assessment, Data Evaluation Page 5-5 Paragraph 2.	***Comment 65:*** *This section states that only sediment covered by less than one foot of water will be included in the human health risk assessment. Children will wade in water greater than one foot of depth (wading up to three feet is common). Please modify the work plan to state that the human health risk assessment for sediments will include water depths up to three feet.* ***Response 65:*** While children may wade in up to 3 feet of water, sediment contacted under those conditions is likely to be washed off before contaminants can be absorbed. Standard practice is to include only sediment beneath 1 foot of water or less in human health exposure evaluations. *Evaluation of Response* *It is not clear how children with their feet in one foot of water will be exposed to contaminants while children with their feet in three feet of water feet will not. Please address the comment.*
Section 5.2, Human Health Risk Assessment, Data Evaluation Page 5-5 Paragraph 2.	***Comment 66:*** *The work plan has proposed a depth limitation for the human exposure to sediments, but has not stated whether this will apply to historical low water or high water in the pond. The size of the pond is variable and the change is dramatic. As such, all sediments in-between the low and high pond levels must be included in this assessment.* ***Response 66:***

PAGE	COMMENTS AND RESPONSES
	All sediments between low and high water levels in the pond will be included. The text will be clarified. *Evaluation of Response* *Navy has addressed the comment*
Section 5.2, Human Health Risk Assessment, Data Evaluation Page 5-5 Paragraph 2.	***Comment 67:*** *This section of the work plan states that chemical will be eliminated as a COPC if the maximum concentration is less then the screening criteria. Please be advised that it is inappropriate to eliminate a chemical simply based upon the fact that the observed concentration is less then a screening criterion. Risk assessments address cumulative risk. Therefore, in order for a particular contaminant or group of contaminants to be eliminate it must demonstrated that elimination of these contaminants will not result in an exceedance of the 10-6 criteria for carcinogens and a HQ of one for non carcinogens. This will necessitate that the cumulative risk of the eliminate compounds be added to the retained compounds to ascertain the effect on the overall cumulative risk. Please modify the plan to reflect this requirement.* ***Response 67:*** This HHRA is being proposed under CERCLA and will follow EPA guidance, which requires a COPC selection process involving elimination of contaminants as COPCs if they are present below risk-based screening criteria. *Evaluation of Response* *State regulations require that one evaluate cumulative risk. Therefore please address the comment as originally requested.*
Section 5.2, Human Health Risk Assessment, Data Evaluation Page 5-5 Paragraph 2.	***Comment 68:*** *This section of the work plan notes that EPA Region IX and III does not have PRGs for certain organic compounds (PAHS, etc) which will necessitate employing PRGS with similar chemical structures. RIDEM has standards for a number of these compounds. Please modify the work plan to use the RIDEM values.* ***Response 68:*** The text will be modified.

PAGE	COMMENTS AND RESPONSES
	Evaluation of Response
	Navy has addressed the comment
Section 5.2, Human Health Risk Assessment Page 5-6, Paragraph 4.	***Comment 69:***
	This section of the work plan proposes using background concentrations of metals and organics (such as PAHs) to eliminate COPC. Please be advised that under Rhode Island Regulations background concentrations only apply to metals and not to organics. Therefore, it is not possible to eliminate organic compounds as COPC. In regards to metals the total cancer risk for the site cannot exceed 10 –5 and the HQ of 1.
	Response 69:
	See Response to EPA Comment #30.
	Evaluation of Response
	A review of the response to EPA comment 30 indicates that the issue has not been addressed. Please address the comment as stated.
Section 5.2, Human Health Risk Assessment Page 5-6, Paragraph 5.	***Comment 70:***
	This section of the work plan includes a cursory discussion of background studies and how they are related to onsite concentrations. The plan notes that a comparison of the means will be conducted and consideration will have to be given to populations with a large number of NDs. Background studies involve more than a comparison of means and an evaluation of NDs. The Office of Waste Management acknowledges that it is not the intent of this work plan to list or discuss all of the attributes of a background study and how the two populations will be compared. However in order to avoid confusion in the implementation of the work plan either remove the paragraph or add the following to the beginning of paragraph 5:
	A background study will be conducted to compare onsite concentration to reference site concentrations. These studies involve a number of statistical procedures and considerations, two of which are discussed in a cursory fashion below
	Response 70:
	See Response to EPA Comment #30. The discussion of the background study and how background concentrations and onsite concentrations will

PAGE	COMMENTS AND RESPONSES
	be compared will be removed from the RI Work Plan at this time. *Evaluation of Response* *Navy has addressed the comment*
Section 5.2, Human Health Risk Assessment, Exposure Assessment Page 5-7.	***Comment 71:*** *The work plan proposes using the 95 %UCL for the RME. Please be advised that the maximum concentration should be employed.* ***Response 71:*** Under EPA Region I guidance (Risk Update #2, 1999) the 95% UCL of the mean is used for both RME and CTE estimates unless the 95% UCL of the mean exceeds the maximum detected concentration. In which case, the maximum is used for RME and the average is used for CTE estimates. *Evaluation of Response* *Maximum values allow one to identify hot spots, which can be removed. Please employ max as well as the 95 % UCL.*
Section 5.2, Human Health Risk Assessment, Exposure Assessment Page 5-7, Paragraph 3	***Comment 72:*** *This section of the report states that a risk assessment will not be performed on a contaminate if it is not above RBC. As noted in previous comments contaminants with concentrations below RBC are retained, unless it can be demonstrated that the cumulative exclusion will not exceed a risk. Please modify this section of the work plan.* ***Response 72:*** See Response to Comment #67. *Evaluation of Response* *See previous Response*
Section 5.2, Human Health Risk Assessment, Exposure Assessment Page 5-8, Paragraph 4, Table 5-3	***Comment 73:*** *The ingestion rate for the construction worker is 200 mg/day. The default values typically used is 480 mg/day. Please modify the table accordingly.*

Response 73:

An ingestion rate of 200 mg/kg for construction workers under the RME scenario is consistent with that used at other sites at Newport (i.e., Gould Island).

The RIDEM recommended value of 480 mg/day for construction worker soil ingestion is based on a paper by Hawley (1985). EPA's 2002 Supplemental Guidance for Developing Soil Screening Levels for Superfund Sites states the following: "EPA believes construction workers are likely to experience substantial exposures to soils during excavation and other work activities; therefore, a high-end soil ingestion rate has been selected to estimate exposures under this scenario. The default value of 330 mg/day (Stanek et al., 1997) listed in Equations 5-1 and 5-2 replaces the previous default ingestion rate of 480 mg/day (Hawley, 1985). While the Hawley value was based on a theoretical calculation for adults engaged in outdoor physical activity, the revised default ingestion rate is based on the 95th percentile value for adult soil intake rates reported in a soil ingestion mass-balance study." The ingestion rate for construction workers will be changed to 330 mg/day.

Evaluation of Response

Under CERCLA the more conservative approach is applied. Please address the comment as originally requested

Section 5.2, Human Health Risk Assessment, Exposure Assessment
Page 5-8, Paragraph 6, Table 5-3

Comment 74:

A number of the exposure values do not correspond to the values listed in the Rhode Island Rules and Regulations for the Investigation and Remediation of Hazardous Material Release, amended February 2004 As an illustration, the EF for residential exposure is listed as 150 days/year; RIDEM's value is 350 days/year. Please modify this and the other values to be consistent with RIDEM's values.

Response 74:

This HHRA is being proposed under CERCLA and will follow EPA Region I recommended values.

Evaluation of Response

Under CERCLA the more conservative approach is applied. Please address the comment as originally requested.

Section 5.2, Human Health Risk Assessment, Exposure

Comment 75:

PAGE	COMMENTS AND RESPONSES
Assessment Page 5-8, Paragraph 6, Table 5-3	*Both the adolescent and adult recreational visitor values do not correspond to the values listed in the Rhode Island Rules and Regulations for the Investigation and Remediation of Hazardous Material Release, amended February 2004, (residential and recreational exposures are equivalent). Please modify the work plan to include the Rhode Island values.* ***Response 75:*** This HHRA is being proposed under CERCLA. Under CERCLA, recreational values are site-specific and set based on professional judgment. The values selected are consistent with other Newport sites, including Gould Island. *Evaluation of Response* *Under CERCLA the more conservative approach is applied. Please address the comment as originally requested.*
Section 5.2, Human Health Risk Assessment, Exposure Assessment Page 5-8, Paragraph 2, Table 5-4, Fish consumption	***Comment 76:*** *The estimate fish consumption rate is 2.7 grams/day. This is significantly lower than the value established by the EPA for recreational freshwater fisherman who consumes fish (6.4 and 26 g/day for mean and 95 percentile). It is also recognized that certain ethnic groups intakes is greater than that noted in the EPA study (example average freshwater intake for native Americans is 10 g/day). At a minimum the work plan must use the 6.4 mean and 26 g/day 95-percentile values in the risk assessment.* ***Response 76:*** See Response to EPA Comment #45. Fish ingestion rates will be changed as requested by EPA. *Evaluation of Response* *Please use the rates specified in the comment*

PAGE	COMMENTS AND RESPONSES
Section 5.3, Ecological Risk Assessment, Evaluation of Ecological COPCs Page 5-16,	***Comment 77:*** *The work plan has reviewed the results of the SASE and has made recommendations concerning the COPCs, which will be used in the ecological risk assessment. It is possible that additional contaminants of concern will be uncovered during the second phase of any investigation. In addition the nature and extent of contamination may change, (as an illustration metals which may have thought to have been limited to one area in the Phase I Investigation may be found in more areas during Phase II). Therefore, it is inappropriate to limit the COPC for an ecological risk assessment until the results of the Phase I and Phase II (SASE and RI) are compiled. At that point recommendations can be made concerning limiting COPC. The work plan must be modified to clearly state that the limiting COPC for the ecological risk assessment will be conducted once the results of the SASE and RI are compiled.* ***Response 77:*** The purpose of this section was to summarize the COPCs from the Screening ERA. This follows USEPA ecological risk assessment guidance so the BERA can be focused on the chemicals and exposure pathways of greatest concern. The assumption is that the site has been pretty well characterized and the chemicals of greatest potential concern have already been identified. Even if additional chemicals are detected in the media at elevated concentrations, it is not likely that they will be significant risk drivers at the site if they have not been detected in the previous investigations. If additional chemicals are detected at elevated concentrations, the potential impact from the chemicals will be discussed and evaluated as necessary in the risk assessment. *Evaluation of Response* *If the site were adequately characterize it would not be necessary to perform a phase II. As this is not the case the work plan must be modified to address the comment.*
Section 5.3, Ecological Risk Assessment, Evaluation of Ecological COPCs Page 5-16,	***Comment 78:*** *This section of the work plan states that in general elevated levels of lead and PAHs coincide. Therefore toxicity test in sediments will be limited to areas of elevated lead. Toxicity test must be conducted at all areas where either lead or PAHs are above screening criteria. Please modify the work plan to reflect this requirement.* ***Response 78:***

PAGE	COMMENTS AND RESPONSES
	See Response to Comment #58. *Evaluation of Response* *See previous response.*
Section 5.3, Ecological Risk Assessment, Evaluation of Ecological COPCs Page 5-16,	***Comment 79:*** *The work plan notes that either the concentrations of metals in surface soil are low or the area of high concentration is not widespread. Therefore earthworm toxicity test will be limited to PAH contaminated areas. Even if limited in aerial extent earthworm toxicity test must be conducted at locations with elevated levels of lead or other metals. Please modify the work plan to reflect his requirement.* ***Response 79:*** The quick-turn PAH data will be evaluated in conjunction with the historic data to select the samples for the earthworm toxicity test so that toxicity tests will be conducted at some locations with elevated concentrations of metals. For example, the proposed surface soil sample at SB132 is located near the surface soil sample with the greatest concentrations of several metals (DA-S-TP10-0001-01). It is likely that the sample from SB132 will be selected for the toxicity test. If the concentrations of metals are low at this location, it is a further indication that elevated concentrations metals is sporadic across the site. No changes will be made to the work plan because the last sentence in the section "Soil Invertebrate Toxicity Tests" in Section 5.3 states "Also, the previously collected analytical data will be used to help select the samples for toxicity testing, as needed." *Evaluation of Response* *In a risk assessment the function of the earthworm toxicity test is to address areas of elevated contaminates levels. Risk management addressed how wide spread the contaminant is. Please address the comment as originally requested.*

PAGE	COMMENTS AND RESPONSES
Section 5.3, Ecological Risk Assessment, Evaluation of Ecological COPCs Page 5-16,	***Comment 80:*** *This work plan proposes to limit toxicity test to those samples with elevated lead, as well as, spatial considerations. It is not possible to know whether a sample will have elevated levels of lead or any other contaminants until the laboratory analysis is completed. Therefore, the work plan must clearly state that the samples to be sent out for toxicity testing will be colleted and undergo testing after the chemical results are back from the sediment sampling effort.* ***Response 80:*** As indicated in Section 3.2.2, the 25 on-site sediment locations will undergo quick-turn (7 days) analysis for lead. After the quick-turn lead data are reviewed, and the existing data are reviewed, ten Site samples will be selected for toxicity testing and the chemical analyses. The quick-turn analysis will be conducted to ensure that the samples selected for the toxicity testing have a representative distribution of low, moderate, and high lead concentrations. This is also discussed in the "Sediment Invertebrate Toxicity Test" section in Section 5.3. Therefore, the Navy does not believe that additional text needs to be added to the text to address this comment. *Evaluation of Response* *See previous response.*
Section 5.3, Ecological Risk Assessment, Evaluation of Ecological COPCs Page 5-17,	***Comment 81:*** *PAHS were reportedly widespread in the soils and is a primary contaminant of concern. However, since the HQ for PAHs is less than one PAH analysis is not included in the earthworm testing. HQ is cumulative, and in consideration of the widespread contamination of PAHs, these compounds must be analyzed for in the earthworm.* ***Response 81:*** The purpose of conducting the screening level risk assessment and refinement of the COPCs in Step 3 is to determine whether certain chemicals can be eliminated from further evaluation. This step is done to focus the BERA on the primary risk drivers at the site. Because PAHs did not cause an adverse risk to terrestrial receptors in the SASE report, they were eliminated from further evaluation. Therefore, the earthworm samples do not need to be analyzed for PAHs.

PAGE	COMMENTS AND RESPONSES
	Evaluation of Response
	Risk Assessment are designed to address cumulative risk. Further r the ultimate concentration of PAHs at the site will not be ascertained until completion of the Phase II soil sampling effort. Therefore, please address the comment as originally requested.
Section 5.3, Ecological Risk Assessment, Soil Invertebrate Toxicity Test Page 5-19,	***Comment 82:***
	The work plan proposes conducting an acute toxicity test for earthworms. Please note the duration of the test. Also, please state whether chronic test are available.
	Response 82:
	The duration of the test is 14 days as indicated in the first sentence in the section "Soil Invertebrate Toxicity Tests" on page 5-19. The Navy is not aware of any standard chronic earthworm toxicity tests.
	Evaluation of Response
	Navy has addressed the comment.
Section 5.3, Ecological Risk Assessment, Earthworm Tissue Collection, Page 5-21.	***Comment 83:***
	The work plan has proposed collecting earthworms from ten locations at the site based upon the results of the SASE study. Please include a list of the propose locations and include them on a map
	Response 83:
	The proposed locations for collecting earthworms will be added to Figure 3-1 and included on Table 3-1C as well. Also, the referenced section on page 5-21 will be revised as follows: "Attempts will be made to collect earthworms for tissue analysis at up to ten locations where surface soil samples are collected to help answer Risk Question No. 5 (see Figure 3-1). The ten proposed locations were selected based on the previous sampling results in areas where elevated concentrations of pesticides, PCBs, and metals were found, in areas of suspected contamination, or to obtain spatial coverage across the site. It is expected that this approach will yield samples from areas with low, moderate, and high chemical concentrations. Table 3-1C lists the samples that will be collected along with the purpose of collecting the samples. The surface soil from these locations also will be collected for chemical analysis. The ten locations will be a subset of the 30 locations where samples will be collected for earthworm toxicity tests. The

number of earthworms collected from each location will depend upon how much tissue the laboratory needs for analysis. If an adequate amount of tissue cannot be collected from a given location, the order of analysis will be based on the purpose of the samples being collected as presented in Table 3-1C."

Evaluation of Response

Navy has addressed the comment. However, the other related comments must be addressed (including the requirement to focus most of the sampling at the portions of the site containing elevated levels of contaminants.).

Section 5.3, Ecological Risk Assessment, Earthworm Tissue Collection, Page 5-21.

Comment 84:

The plan notes that toxicity test will be conducted in ten different locations representing low, moderate and high levels of contamination. Please indicate whether the low or moderate levels of contamination will be above the lowest available benchmark values. If this is not the case, please indicate why.

Response 84:

It appears that the comment is referring to earthworm tissue sampling as opposed to earthworm toxicity testing. The collection of earthworm samples for tissue analysis is being conducted to obtain chemical concentrations in earthworm tissue as inputs into the food chain model. Although some of the benchmark values are based on risks to wildlife via the food chain pathway, others are not. See Response to Comment #83 for changed text regarding collecting earthworms in areas with low, moderate, and high levels of contamination. The goal of this approach is to determine whether the chemical concentrations in the tissue are increasing with increasing soil concentrations (i.e., are the chemicals accumulating in the worms). Because most of the benchmark values for wildlife are low, it is likely that the moderate chemical concentrations in soil, and probably some of the low concentrations in soil will be greater than the benchmark values for wildlife.

Evaluation of Response

The intent of the comment was to focus on areas, which exceed benchmarks. It is not clear whether the work plan will be modified to follow this approach. Please clarify.

PAGE	COMMENTS AND RESPONSES
Section 5.3, Ecological Risk Assessment, Earthworm Tissue Collection, Page 5-21.	***Comment 85:*** *Ten locations will be tested for earthworm toxicity. It is assume that at least five samples will be collected from the areas exhibiting high concentrations of contaminants, three samples will be collected from the moderate areas and two samples will be collected from the low areas. Please confirm.* ***Response 85:*** It appears that the comment is referring to earthworm tissue sampling as opposed to earthworm toxicity testing. Because different contaminants were found in different areas of the site, the proposed locations were selected based on areas where elevated levels of pesticides, PCBs, and/or metals were found, or are expected to be found. Also, a few locations were selected to obtain good spatial coverage across the site. Because birds and mammals will be feeding over the entire site, it is not clear why the sampling should be biased in the areas with the greatest levels of contamination. See Response to Comment #83. *Evaluation of Response* *Focusing on the contaminated soils will represent a worse case scenario. Further, final locations must be selected one all of the Phase II data has been analyzed.*
Section 5.3, Ecological Risk Assessment, Earthworm Tissue Collection, Page 5-21.	***Comment 86:*** *The work plan has proposed collecting earthworms from ten locations at the site based upon the results of the SASE study. While it is acceptable to propose sample locations based upon data collected to date, the final locations cannot be determine until all of the samples from the RI have been collected and analyzed (The RI may identify additional areas of concern or areas with contamination greater than that uncovered in the SASE). Please modify the work plan to state that earthworm collection will not occur until the results from the soil sampling effort have been obtained.*

PAGE	COMMENTS AND RESPONSES
	Response 86:
	See Response to Comment #83. Earthworms move through the soil so the chemical concentrations will not necessarily be related to the concentrations in a particular sample. However, the tissue concentrations should be related to the concentrations in particular areas, which was the basis for selecting the locations for the earthworm samples. Therefore, the Navy does not believe that it is necessary to go back out to the site after the data are reviewed and collect earthworms.
	Evaluation of Response
	See previous comment.
Section 5.3, Ecological Risk Assessment, Soil Sample Survival Less Than 80 Percent, Page 5-24.\	***Comment 87:***
	An 80 percent survival rate is proposed to be used as a cut off value. Typically and 85 values is used for sediments. Please modify the work plan to reflect this requirement
	Response 87:
	Please provide the basis for the statement "typically an 85% value is used for sediment." In the ASTM standard for conducting sediment toxicity tests, the average survival in the laboratory controls must be greater than 80%. Therefore, the work plan will not be modified.
	Evaluation of Response
	Navy has addressed the comment
Section 5.3, Ecological Risk Assessment, Soil Sample Survival Less Than 80 Percent, Page 5-24.	***Comment 88:***
	Site toxicity values will be compared to the background stations. This section of the work plan should note whether all of the reference stations will undergo toxicity testing or a criteria will be used to select which reference station undergoes toxicity testing.
	Response 88:
	As presented in Section 3.2.2 in the paragraph beginning with "After collecting the VOC...." and on Table 3-2, toxicity tests will be conducted on all five-reference samples.
	Evaluation of Response
	Navy has addressed the comment

PAGE	COMMENTS AND RESPONSES
Section 5.3, Ecological Risk Assessment, Soil Sample Survival Less Than 80 Percent, Page 5-24.	***Comment 89:*** *The work plan must state that if the reference station is found to be heavily contaminated or toxic it will not be used as a reference station.* ***Response 89:*** See Response to EPA Comment #18. *Evaluation of Response* *Navy has addressed the comment*
Section 5.3, Ecological Risk Assessment, Soil Sample Survival Less Than 80 Percent, Page 5-24.	***Comment 90:*** *The work plan proposes to use the results of toxicity testing to ascertain whether a particular sample represents an unacceptable risk. It is acceptable to state that the results of the toxicity test indicate that a sample is or is not toxic. Whether a particular location represents a risk will be determine be evaluating all of the parameters, sediment chemistry, toxicity, modeling, tissue results, etc. In essence the results of a single toxicity test cannot be used to discount samples, which exhibit elevated chemistry, or tissue concentrations, or modeling results, etc. The Office of Waste Management realizes that this was not the intent of the Navy to use toxicity test as the sole criteria for determining whether a particular sample represents a risk. In order to avoid confusion to the public, please modify the work plan to state this.* ***Response 90:*** The toxicity testing is being conducted because it has already been determined that the chemical concentrations in the sediment and/or soil were greater than benchmarks and higher effects levels (for sediment). Therefore, the approach for this work plan is that even though chemical concentrations are greater than the benchmarks, if the samples are not toxic than risks are acceptable. Therefore, it is the intent of the Navy to use the toxicity tests as the sole criteria for determining whether a particular sample represents a risk to the receptor group being tested. Note that the food chain modeling and tissue results are used to evaluate risks to wildlife, not invertebrates. The following text will be added after the words "no unacceptable risk" (and the different variations) to clarify this: "to soil or sediment invertebrates (depending upon the test that is conducted)." See Response to Comment #92.

PAGE	COMMENTS AND RESPONSES
	Evaluation of Response
	The Office of Waste Management will not accept any risk assessment in which the results of one test are used to discount the results of another. As proposed, the Office of Waste Management will not accept the proposed work plan Ecological Risk Assessment for the site, nor will it accept any conclusions generated by such a risk assessment.
Section 5.3, Site Sample Growth Difference Laboratory Control Page 5-25.	***Comment 91:***
	This section of the work plan will evaluate growth of the test species. Please confirm that the test species are the earthworm and the amphipod, and the duration of the test will be 28 days for the amphipod.
	Response 91:
	The growth endpoint is only for the amphipod, not the earthworm. The duration of the sediment test is 28-days, as presented in the section titled "Sediment Invertebrate Toxicity Tests." As indicated in the section titled "Soil Invertebrate Toxicity Tests", the endpoint of the earthworm toxicity test is mortality.
	Evaluation of Response
	Navy has addressed the comment
Section 5.3, Site Sample Growth Difference Laboratory Control Page 5-25, Last Paragraph.	***Comment 92:***
	The work plan proposes to use the results of the toxicity test to develop site-specific ecological benchmarks. Multiple lines of evidence are used in an ecological risk assessment, and no single measurement end point can be used to discount another endpoint, (as an illustration toxicity test cannot be used by themselves to discount elevated chemistry or tissue results, or diversity analysis, etc). Therefore, please remove this paragraph from the work plan.

Response 92:

The concentration plots incorporate the chemistry data along with the toxicity test data to determine whether there is a relationship between the chemical concentrations and a toxic response. Therefore, both pieces of data are being used in the evaluation. Should none of the samples be toxic, however, it is an indication that the chemicals are not bioavailable. In this case the impacts from the chemistry data are in fact discounted, because the chemicals are not impacting the receptors of concern. No other lines of evidence are proposed for evaluating soil or sediment invertebrates, such as diversity analysis. Also, the earthworm tissue data is only being used as an input into the food chain model for wildlife. It is not being used to evaluate potential impacts to earthworms because there are no tissue residue values for earthworms.

Evaluation of Response

See response to comment 90.

Section 5.3, Ecological Risk Assessment, Birds and Mammals, Page 5-27.

Comment 93:

The work plan states that only those contaminants which bioaccumulate will be included in the food chain model to access impacts to birds and mammals. The work plan must state whether the available screening criteria access impacts other than those associated with contaminants which bioaccumulate. If non-bioaccumulation impacts are used in the screening criteria, then it is inappropriate to limit contaminants to those which bioaccumulate.

Response 93:

Because the screening levels for most chemicals are not based on risks to wildlife, all bioaccumulative chemicals, regardless of their concentration compared to screening levels, will be included in the food chain model. For example, if the concentration of 4,4'-DDT was less than its benchmark in sediment, it would still be carried through the food chain model for piscivorous wildlife.

Evaluation of Response

Please review the impact for some of the available benchmarks. In addition the Navy has not addressed the last sentence of the comment.

Appendix D, Ecological Screening Values, Table D-1

Comment 94:

In this table, adjacent to the contaminants are a series of letter (for

PAGE	COMMENTS AND RESPONSES
	example the letters g, s, d and w are adjacent to lead). The letters do not appear in the legend of the table. If these letters are not in the legend please modify the legend to include their definition.
	Response 94:
	An explanation will be added to the Appendix D tables. See footnotes on Table 5-1 and 5-8.
	Evaluation of Response
	Navy has addressed the comment
Appendix D, Ecological Screening Values, Surface Soils,	***Comment 95:***
	The work plan notes that screening was not performed for animals and birds since food chain modeling will be conducted. If screening is not performed for these receptors then all contaminants detected at the site would be used in the models. Please confirm that this is the case.
	Response 95:
	See Response to Comment #93.
	Evaluation of Response
	See previous response.
Section 3.2 Sampling Activities, Page 3-1	***Comment 96:***
	A review of the Closed Out Report for the Drum Disposal area indicates that test pits were only dug on the eastern end of the site and the last test pit on the eastern end of the site extended only five feet from an area known to contain drums. Test trenches must be dug on the northern, southern, western and eastern end of the site. In addition prior to excavating the test trenches the area must be investigated with an EM survey.
Section 3.2 Sampling Activities, Page 3-1	***Comment 97:***
	A review of the Closed Out Report for the Drum Disposal area indicates that confirmatory samples were not collected. Please be advised that confirmatory samples must be collected in this area.
Section 3.2 Sampling Activities, Page 3-1	***Comment 98:***

PAGE	COMMENTS AND RESPONSES
	A review of the Closed Out Report for the Paint Can disposal Area indicated that test its were not dug to the north, south and east of the disposal area. Please be advised that test pits must be dug in this area and soils samples must be collected and analyzed.
Section 3.2 Sampling Activities, Page 3-1	***Comment 99:*** *A review of the Closed Out Report for the Paint Can disposal Area indicated that confirmatory samples were not collected. Please be advised that confirmatory samples must be collected from the base and the sidewalls of the excavation.*
Section 3.2 Sampling Activities, Page 3-1	***Comment100:*** *A review of the Closed Out Report for the Drum Disposal area indicates that test pits wee not dug at the base of the excavation to ascertain if buried drums were deeper then six feet. If this is the case test pit must be dug to a depth greeter then six feet in former footprint of the drum disposal area.*